Account of the OBSERVATORY *belonging to* TRINITY COLLEGE, DUBLIN. *By the Rev.* H. USSHER, *D. D. M. R. I. A. and F. R. S.*

THE delicacy of practical Aſtronomy, in its preſent improved ſtate, has laid open to us new ſources of error, and additional difficulties, which the leſs perfect inſtruments of our predeceſſors could not have taught them to ſuſpect. One peculiar advantage of Aſtronomy, above other ſciences, was formerly thought to ariſe from the nature of its ſubject, viz. the motions of bodies ſo remote as to free the inquirer from the complicated conſideration of local effects, corpuſcular attraction, and chemical ſolution. But it is not ſo at preſent; the ſubtle element of fire, the different ſpecies of air, and their various combinations, have rendered the theory of refractions, even as coming from the hands of Bradley, ſtill liable to ſuſpicion; and whilſt we juſtly admire the induſtry of that great man in making obſervations, his ſagacity in ſelecting

Read June 13, 1785.

them, and the elegance of his deduction, ſtill the truly phyſical inquirer muſt lament the circumſtances of the obſervations themſelves, which, it is not eaſy to ſuppoſe, could afford him indiſputable elements, when we conſider that they were made in a confined room, in which the temperature was in general widely different from that of the external air, and by the help of inſtruments cloſely attached to a maſs of ſtone of nine or ten feet ſuperficial ſquare by three or four feet in thickneſs. We have good reaſon to ſuppoſe that ſuch a bulk of cold ſtone decompoſes the ſurrounding air to ſome diſtance. In ſome particular circumſtances of the atmoſphere, the moiſture reſting on the ſurface, and in others, the tremulous motion of the adjacent air, ſeem to indicate either a decompoſition or ſurcharge in that portion of the air, by means of which the theory of refractions has hitherto been experimentally determined; and therefore leave the ſubject ſtill liable to objections apparently well founded.

The preſent Aſtronomer Royal, Doctor Nevil Maſkelyne, whoſe ſagacity leſs important matters could not eſcape, aware of this defect, has opened his Obſervatory more to the air, and, as far as the conſtruction of the building would admit, has removed part of the evil; the quadrants, however, ſtill remain attached to the great maſs of ſtone.

Ever ſince that important period, at which Aſtronomy appears to have aſſumed a new face, by the introduction of metallic inſtruments of more accurate frame and diviſion, and the adoption of teleſcopic ſights, the groſſer difficulties of the ſcience have been gradually removed: ſome, which before that time were conſidered of little

little importance, and others, 'till then totally unſuſpected, are now become of ſerious conſequence, and require the moſt accurate theoretical inveſtigation, and the utmoſt refinement of practice. Amongſt theſe may be ranked the minute variations of refraction; which may, perhaps, juſtly be conſidered as the greateſt bar at preſent to the perfection of Aſtronomy.

I MUCH ſuſpect that the true conſtitution of our atmoſphere is, even now, but little known; but I am not without hopes of intereſting diſcoveries in this important branch of ſcience, from the novel means of exploring its qualities in circumſtances very different from thoſe of all former experiments. We are, however, certain that it is ſubject to decompoſition and change; and obſervation and theory prove to us that refractions are thereby affected.

IF we propoſe by obſervation to procure elements for a law of refraction, whether we adopt the conſtitution of the atmoſphere ſuppoſed by our predeceſſors or not, it is manifeſt that obſervations made in the open air promiſe the greateſt degree of conſiſtency with each other, and the beſt elements for a theory and law of refractions; but as this method, particularly in our northern climates, cannot be purſued with ſafety either to the Aſtronomer or his apparatus, we can only endeavour to approximate to this perfection, by making our buildings as open to the air as may be conſiſtent with their particular ſtructure, and the health and convenience of the obſerver. This ſubject had for a long time engaged my attention, and I had digeſted what occurred to me upon it into ſome form, when, by a happy concurrence

concurrence of circumſtances I was enabled to reduce part of my ſyſtem to practice, and to give a fair trial to what I conſidered likely, I do not ſay to remove, but at leaſt to diminiſh the evil.

Our late learned and munificent Provoſt, Doctor Francis Andrews, had bequeathed to the College a conſiderable ſum of money towards the building of an Obſervatory, and furniſhing it with proper inſtruments, which ſum was to ariſe from an accumulation of a part of his property, to commence upon a particular contingency happening in his family. As ſoon as this had taken place, the College, with a diſtinguiſhed liberality, and a true zeal for the promotion of ſcience, determined not to loſe time by waiting for the accumulation; but, to haſten the execution of the plan, advanced from their own funds a ſum conſiderably exceeding the original bequeſt; although at that time not well qualified for ſo great and ſudden a call, on account of the large ſums that had been by them already expended upon other public buildings. They did me the honor to elect me Profeſſor, and ſent me to England to order from Mr. Ramſden the beſt inſtruments, without limitation of price. His abilities are ſufficiently known to all Europe. As ſoon as the choice of the inſtruments had been determined *, the next point to be conſidered

* The inſtruments ordered were a tranſit inſtrument of four feet axis and ſix feet focal length, bearing four inches and a quarter aperture, with three different magnifying powers up to near 600, which great power it bears with a moſt ſurprizing degree of diſtinctneſs.—An intire circle of ten feet diameter, on a vertical axis, for

ſidered was the arrangement of the building, and the moſt commodious diſpoſition of the inſtruments, ſo as to give to each a ſituation juſtly ſuited to the particular obſervations to be made. Accordingly, I deviſed the annexed plan, which the College was pleaſed to adopt, and they committed the ſuperintendence to me in the arrangement and execution of ſuch parts as demanded particular nicety and attention.

THE deſcription of this Obſervatory, accompanied with a ground plan and elevation, I now lay before the Academy.

ALTHOUGH I have ſpared neither ſtudy nor aſſiduous attention on this building and apparatus, I am not ſo vain as to ſuppoſe it perfect; it may hereafter betray to me imperfections which perhaps even now are anticipated by better judges. This time alone can determine: and the public at large, and this Academy in particular, may depend upon the moſt faithful detail of the advantages or imperfections of every thing which is original either in the building or apparatus.

WITH reſpect to the ſtructure, I need not, to Aſtronomers, apologize for want of ornament and architectural elegance in a building which, to anſwer its deſign fully, muſt probably reject both; perfect ſtability and convenient diſpoſition of the inſtruments form here the architect's great object; and a vain affectation of taſte may militate againſt theſe eſſential qualities.

for meaſuring meridian altitudes.—An equatorial inſtrument, the circles being five feet diameter.—And an achromatic teleſcope, mounted on a polar axis, and carried by an helioſtatic movement, for occaſional obſervations.

In the erecting of an Obſervatory the three principal points are the ſituation, foundation and ſoil. As the building muſt neceſſarily be low, the ſituation ſhould be elevated, commanding a clear horizon all around, but particularly to the North and South.

That an Obſervatory ſhould be low, muſt appear an odd aſſertion to ſuch as are acquainted with thoſe only of the laſt century, and not converſant with modern practice: the preſent refinement of aſtronomical inſtruments, ſince the application of teleſcopic ſights, demands the utmoſt ſtability. This was a point not to be obtained whilſt refracting teleſcopes, of the original frame and conſtruction, were in uſe. The unmanageable length of tube demanded by the ſimple object glaſs, where any tolerable magnifying power was deſired, rendered lofty and extenſive piles of building indiſpenſable; but the great invention of reflecting teleſcopes by Sir Iſaac Newton, and the diſcovery of the achromatic object glaſs by Mr. Dollond, ſtill more uſeful when applied to aſtronomical inſtruments, have freed us from the neceſſity of introducing thoſe lofty piles, by which the courſe of obſervation with ſome of the moſt valuable inſtruments is interrupted, and an Obſervatory injured in many and important reſpects.

In conſequence of the imperfection of teleſcopes in the times which I have mentioned, we find thoſe great and unſtable ſtructures forming an eſſential part of every Obſervatory built at that period, all which are now unneceſſary; and if through a weak attachment to old cuſtoms they are introduced into Obſervatories at preſent, they may add to the magnificence, at the expence of the value of the work.

THE next important article is the foundation, which ſhould be of the moſt ſolid kind: For this reaſon a rock, and that of great extent *, or a hard gravel, ſhould be made choice of; if neither of theſe can be found in the place where other circumſtances require the Obſervatory to be built, it will be neceſſary to give all adventitious ſtability in our power, by deep arches or piles driven by an engine; for ſuch is the conſummate execution of modern inſtruments, that they immediately betray the imperfections of a building, whether from unſtable foundation, or inartificial ſuperſtructure.

THE ſoil ſhould be naturally dry, as will generally be the caſe when the next ſtratum is gravel. The advantage of ſuch a ſoil I have frequently remarked at the Royal Obſervatory at Greenwich, during my reſidence near it, where the ſecond ſtratum, and indeed almoſt the firſt, being a flinty gravel, I have ſometimes ſeen the air ſerene, whilſt the country around has been covered with a thick fog; which poſſibly may be accounted for from the gravelly ſtratum, which ſuffers the rain and moiſt dews to percolate, and leave the ſurface dry; or, to indulge another conjecture, perhaps the poliſhed ſurface of the cold flints, with which the ſoil and ſurface abound, may tend to decompoſe the air, and make it depoſit any ſuperabundant moiſture.

THE Obſervatory belonging to Trinity College, Dublin, is built on a high ground N. W. of the city, and diſtant about

* I have heard of an Obſervatory built upon a rock, but one of ſhort extent, that betrayed moſt ſingular irregularities in the poſition of the inſtruments.

four Engliſh miles. The mercury in the barometer ſtands there
In.
0,254 lower than at high water mark at the Liffey in ſpring tides, the thermometer being in Dublin 62°, and at the Obſervatory 59° *. It is founded on a ſolid rock of limeſtone of ſome miles extent, which, near the Obſervatory, riſes to within ſix inches of the ſurface, and is ſo hard as to require to be blaſted with gunpowder for the ordinary uſes of the farmer. The ſoil around is compoſed of loam and a ſpecies of calcareous ſubſtance, called in Ireland limeſtone-gravel, which is very abſorbent. The horizon is remarkably extenſive, without the ſmalleſt interruption on any ſide, except that on the South the Wicklow mountains, diſtant about fifteen Engliſh miles, riſe about a degree and a half. Their diſtance ſeems to remove all apprehenſion on account of their attraction exerted on the plumb-line; and the gradual and equal acclivity of the hill, on which the building is erected, ſeems to ſecure us from any more near and dangerous local effect in that reſpect. Conſidered in another point of view, theſe mountains afford a ſtriking advantage, of which I have been frequently an eye witneſs: When clouds are coming from the South, I have often ſeen them arreſted by the mountains, leaving the ſpace from thence to my zenith ſerene, whilſt to the Eaſt and Weſt, where no ſuch obſtacles intervene, all has been obſcured with flying ſcud. From E. to S. E. the ſea is viſible, diſtant about ten or twelve miles, a circumſtance which in ſome particular caſes is not without its uſe: But what I conſider particularly happy, is the opportunity afforded by the Light-houſe for obſervations on terreſtrial refractions both by night and day. This is near five miles

* This the reſult of one obſervation only.

miles diſtant from the land, and about fifty feet above the water. In particular ſtates of the atmoſphere, and more eſpecially on the approach of ſevere weather, the Welſh mountains are diſtinctly viſible, particularly that ridge of hills which runs S. W. to point Braich-y-pwll, and bounds Caernarvon bay in that direction.

I SHALL proceed to the particulars of the plan of this Obſervatory.

PLATE I. is the elevation of the Eaſt front.

PLATE II. is the ground plan. E is the baſe of a ſolid pillar of ſixteen feet ſquare, which is of the moſt ſubſtantial maſonry, and is raiſed from the ſolid rock to ſuch height, that the centre of the equatorial inſtrument, which it is to ſupport, may overlook every part of the building. This inſtrument demands the entire range of the horizon, ſince, as it is now conſtructed, it may be applied to the moſt valuable purpoſes in Aſtronomy. It was a long time deliberated whether it would not be better to ſubſtitute for this inſtrument a vertical and azimuth circle of the ſame diameter, which has undoubtedly peculiar and unrivalled advantages; but many circumſtances of ſingular convenience in the equatorial, as alſo ſome peculiarities in its application, at length determined the choice in its favour.

THIS ſubſtantial pillar is ſurrounded by a circular wall at a foot diſtance, which is to ſupport the turning dome, and the floor of the room, which muſt not be ſuffered to touch the

pillar itſelf, or the piers which are to ariſe from it, for the ſupport of the axis of the inſtrument; and for this purpoſe the floor is framed ſo as to let the piers paſs through untouched; whence no motion of the floor or ſurrounding wall can be communicated to the inſtrument, and the temperature of the pillar is in ſome meaſure preſerved by the ſurrounding wall. The turning dome is framed of wood, each rib conſiſts of three equal and parallel pieces, the grain of the wood in theſe being ſo diſpoſed as to counteract each other's inclination to caſt or warp. The frame is covered with canvas ſoaked with drying oil, tar, and white paint, and coated afterwards with white paint, wrought to ſuch conſiſtence as to be laid on with a trowel. The inſide is to be covered with another thinner ſheeting, and between the two, wood-moſs, if neceſſary, will be introduced, to prevent the tranſmiſſion of heat. The aperture for obſervation is two feet ſix inches wide, and opens to ſix inches beyond the zenith. As the dome is an hemiſphere, the ſlide which ſhuts this aperture is made to move vertically through the zenith, with a movement ſimilar to that of ſome modern writing-tables: The ſlide paſſing through the zenith deſcends through the oppoſite quadrant of the hemiſphere within the dome; but as this ſlide exceeds ninety degrees of the hemiſphere by ſix inches, it would be impoſſible in opening the aperture to make the ſlide deſcend through its whole length on the oppoſite ſide, as the wall-plate muſt ſtop it before its aſcending extremity could reach the zenith: Therefore, to remedy this, a tranſverſe hinge is crontrived in the ſlide about eight inches from that extremity, which thus deſcends, or that end which is next the zenith when the aperture is ſhut; this hinge lets theſe eight hinges hang perpendicular to the horizon, when the ſlide has

has riſen ſo much on the other ſide, and the whole is thus allowed to deſcend until the zenith is laid open to obſervation. Around this dome there is a platform, commanding one of the moſt extenſive and varied proſpects that can be imagined *.

THE room for making obſervations on the meridian requires an uninterrupted view to the North and South. This room is here placed to the Weſt of the building. It is manifeſt to any one who compares the preſent plan with the indiſpenſable requiſites of an Obſervatory, that the front might have been preſented either to the Eaſt or Weſt with equal advantage, ſo far as regards the neceſſary diſpoſition of the rooms for obſervation; the beauty of the eaſtern proſpect, and the elegance of the approach on that ſide from the city, would have been ſufficient of themſelves to have given the preference to the preſent diſpoſition; but theſe inferior conſiderations happily coincided with one much more important. In this part of the iſland the

* The Obſervatory commands on the South ſide a view of the grounds of Lord Bective, with a gentle declivity to the river, and from thence a varied picture of the rich ſcenery of the woods of the Phœnix Park, terminated in the back ground by the majeſtic grandeur of the Wicklow mountains. To the S. E. we have the city of Dublin, diſtant four miles, the ſemicircular bay with the ſhipping, and the great South Wall extending five miles into the ſea, and terminated by the Light-houſe; the ridge of rocky hills called The Three Brothers forming the head of Dalkey, and bearing Malpas's Obeliſk on the higheſt point. On the E. and N. E. Clontarf and its environs, the Hill of Howth, Ireland's Eye and Lambay. From thence to the N. W. the proſpect is ſo uncommonly level and extenſive as to gratify the aſtronomer much more than the painter; but even this variety is not without its beauty. To the S. W. we have the pictureſque ruins at Caſtleknock, and to the Weſt the extended and rich view of Kildare, in which Mr. Conolly's Obeliſk forms a grand and central Object.

weſterly

weſterly winds prevail, I believe, moderately ſpeaking, two-thirds of the year; and as this circumſtance ſecures us in that proportion from any effect of the ſmoke of the city, ſo this diſpoſition of the meridian room frees us in the ſame proportion from ſmoke or other vapours from the houſe or building.

As this is the moſt eſſential part of the work, it will require a more particular detail.

The meridian room is thirty-ſeven feet two inches long, and twenty-three feet broad in the inſide clear, and twenty-one feet high. It is deſigned for the uſual obſervations of the paſſages of the heavenly bodies over the meridian, and of their meridian altitudes; theſe eſſential objects require the moſt minute attention in every particular.

But as I do not mean in this paper to enter into a detail of the particular inſtruments, I ſhall confine myſelf to an account of the methods adopted to procure convenience of obſervation, ſtability and temperature.

The broad croſs in figure 2d, plate II. repreſents a piece of the moſt ſolid maſonry, riſing from the rock to within a few inches of the joiſts of the floor, and totally unconnected with the walls. At X,X is laid down a ſolid block of Portland ſtone of nine feet two inches in length, by three feet in breadth, and one foot four inches thick. This block ſupports the pillars of the tranſit inſtrument, whoſe baſes are marked by X,X; theſe pillars are ſeven feet ſix inches high, their baſes three feet from North to South, and two feet ſix inches from Eaſt to Weſt.

Weſt. Theſe were choſen as they lay beſide each other in the quarry; and though each be a heterogeneous maſs, yet their relative parts at given altitudes are perfectly ſimilar; and this appears abſolutely neceſſary to prevent any effects of diſſimilar expanſion or contraction from heat, cold, moiſture, &c. at given heights. If Portland ſtone were perfectly homogeneous this would be an unneceſſary caution, but the ſlighteſt attention will prove that it is not ſo; and theſe pillars particularly ſhew it. Further, experiment proves to us that the temperature of the pillars is different at different altitudes; if now the two pillars at a given altitude have a given temperature, and happen to be diſſimilar at that altitude, it is natural to expect that their expanſions will be different, and the adjuſtment of the inſtrument ſupported by them deſtroyed.

EACH of the ſupporting pillars conſiſting of one ſolid piece, all effects of mortar and cement are avoided, and what is of more importance, all iron cramps are unneceſſary.

THE temperature of the pillars at different heights is ſhewn by thermometers, the tubes of which are bent at right angles, and their bulbs are inſerted into the ſtone, and ſurrounded with duſt of the ſame ſtone.

NEAR the weſtern end of the croſs ariſe four pillars, marked M, M, M, M, for the ſupport of the frame of the vertical meridian circle *. Beneath, from North to South, is laid another block of Portland

* Inſtead of quadrants attached to a ſtone pillar, it is propoſed here to have an entire circle of ten feet diameter, ſupported on a vertical axis: This alteration ſeems

Portland ſtone, ſo placed as not to touch the pillars or floor; this is to ſupport the vertical axis. C repreſents the clock pillar, being five feet ſquare at the baſe, decreaſing as it riſes to two feet above, in order to afford all proper ſtability. This may appear to ſome perhaps rather whimſical than neceſſary; but it would not be difficult to ſhew, both from theory and experiment, the neceſſity of the moſt ſolid ſupport for a clock, on which, according to the modern practice, ſo much juſtly depends. Beſides, there is a proper degree of attention due on our part to the work of Mr. Arnold, whoſe reputation in ſome degree lies at the mercy of every one who may or may not be induced to give to his ſuperior work every minute attention which it requires and deſerves. Our clocks, executed by him, are finiſhed in a maſterly manner, the pallets of ruby, all the holes of the laſt movement jewelled, the ſuſpenſion ſprings of gold, with his own five-barred pendulum, with cheeks capable of experimental adjuſtment, ſo as to prove all vibrations iſochronal, whatever be the throw out of the clock.

THE floor of the room is framed ſo as to let all theſe pillars riſe totally detached from it. A few inches above the floor, around each pillar, is a wooden ſkirting, terminated by pliable leather, which reaches to the floor, and overhangs a moulding raiſed about each pillar. This is done to prevent the admiſſion of

ſeems to promiſe many advantages in temperature both of air and inſtrument, facility and accuracy of adjuſtment, not to mention the certainty of being enabled to prove the centre of the inſtrument; but on this I ſhall not at preſent enlarge

of duſt, which might in time form a communication between the maſonry and the floor.

It has not been uſual in Obſervatories to place the tranſit inſtrument and thoſe adopted for meaſuring altitudes in the ſame room, and yet ſome advantages ariſe from it. In the firſt place, one clock ſuffices, which is a circumſtance of ſome œconomy, where the price is eighty guineas. But the following is a ſingular convenience: it not unfrequently happens that one perſon is obliged to take both the meridian tranſit and the altitude of a celeſtial object, in which caſe theſe inſtruments being placed near each other afford a ſtriking advantage. The obſerver may take the paſſage of the ſun's limb (for inſtance) over the two firſt wires of the tranſit inſtrument, omit the middle wire, haſten to the circle, take the altitude of one limb, and write it down, then take the altitude of the other, and leave it to be read off at leiſure, return to the tranſit inſtrument, and take the paſſage over the two laſt wires, whence the right aſcenſion can be determined with as much accuracy as if the paſſage over the meridian wire itſelf had been obſerved.

So far we have conſulted ſtability and convenient diſpoſition; the proviſion for equability of temperature is next to be conſidered.

It is manifeſt that obſervations with ſuch large inſtruments cannot be made abſolutely in the open air; all we have left therefore is to admit as free a paſſage to the external air as is conſiſtent with the ſafety of the inſtruments and the obſerver.

For this purpoſe the meridian apertures for the tranſit inſtrument and circle are ſix feet wide; which is a breadth conſiderably greater than I have yet heard of in any Obſervatory. Theſe, or a part of them, ſhould be left open until the temperature within and that abroad are found to agree entirely, or as nearly as can be effected: through theſe and the windows, there is a free admiſſion of air; but to break the force of the wind, which might agitate the plumb-lines, and at times diſplace the inſtrument, there are ſkreens of the thinneſt canvas pervious to the air, which are contrived, occaſionally to cover the aperture, except a ſpace of two feet in the middle; but this only uſed in windy weather. And that the temperature within may at all times be more nearly equal to that of the external air, there are ſemicircular air-holes in the walls grated and covered with the ſame kind of wide canvas, which are deſigned to be left always open to the air, except in wet or damp weather, at which times they may be cloſed with ſhutters within. The ſame proviſion is made here as in the equatorial dome to prevent the tranſmiſſion of heat.

Plate II. Fig. 3.

THE South and North wings now only remain to be explained.

THE South wing is deſigned for occaſional obſervations, ſuch as eclipſes, occultations, &c. which being confined to the planets, require only the range of that part of the hemiſphere in which theſe can at any time be viſible. On this account the centre of the ſouthern dome is ſo far removed towards the South, that a line drawn from thence to the extremity of the meridian room ſhall

ſhall clear the greateſt amplitude of any of the planets in this latitude; for as to comets, they are always moſt conveniently obſerved by the equatorial inſtrument, and that has the entire horizon at command in this Obſervatory.

In this ſouthern wing P, P repreſent the baſes of two pillars which are to riſe into the dome; and, reſting on ſolid maſonry, unconnected with the floor and ſurrounding walls, are to ſupport a polar axis, carrying an achromatic teleſcope, to which it is propoſed to apply an helioſtatic movement, which will carry it round with an equable motion in a ſidereal day. This is not a matter of ſimple amuſement, many advantages ariſe from ſuch an apparatus. Every practiſed obſerver is aware of the errors that muſt neceſſarily ariſe from the permanency of the effect of light upon the organ of ſight; this makes it probable that we do not always ſee a ſtar in its true place in the field of a fixed teleſcope. In the tranſit inſtrument, for inſtance, the image of the wire does not change its place in the eye, but is permanent; as that of a ſtar approaches this wire, the laſt impreſſion remains until the ſtar has paſſed the wire, and before the new impreſſion is ſenſible. As to the diſtinctneſs of viſion to be expected from it, the following experiment will be ſufficient for any one who doubts. Let a line be drawn horizontally upon a wall, at ſuch diſtance from a teleſcope as that the obſerver ſhall be able to read through it tolerably ſmall print; let the teleſcope be directed to a certain point in this line; let a man move a printed paper, having both large and ſmall characters along this line as equably as he can; when the paper comes oppoſite the teleſcope, the obſerver will find that the greater characters alone are diſtinct, but let him follow the paper with the teleſcope and he will find the ſmall characters

diſtinct likewiſe. This inſtrument promiſes alſo the faireſt trial to the wire micrometer, which has, I fear, too haſtily been laid aſide. The priſmatic, the Caſſegrain, the divided object glaſs, the divided eye-glaſs micrometers, have all their particular diſadvantages, deriving error from metaphyſical as well as phyſical ſources; not that I mean to infer that the wire micrometer is unobjectionable.

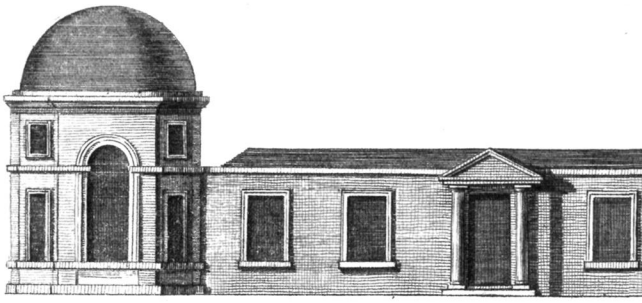
THE dome of the upper room here is to be ſimilar to that of the equatorial room, and is deſigned for this one inſtrument. Two obſervers in the ſame room are too many for ſuch obſervations as are to be made here: He muſt be a ſteady practiſed obſerver, whoſe imagination will not be affected when another, with a more perfect inſtrument, gives evident ſigns of his obſervation being compleated, whilſt to the former it has not yet taken place. Thus let us ſuppoſe two teleſcopes of different powers applied to an emerſion of one of Jupiter's ſatellites, the better teleſcope may perhaps ſhew it fourteen or fifteen ſeconds ſooner than the other; now if the obſerver with the better teleſcope riſe to write down his obſervation, he will not only diſturb the other with the noiſe, but the imagination of the latter may even perſuade him that the emerſion has taken place to his eye, when with ſuch a teleſcope it was impoſſible. To avoid this inconvenience, the lower room is deſigned to permit occaſional obſervers to practice, and maſonry is contrived to ſupport other teleſcopes with proper ſtability. The northern wing may be applied to the uſe of a zenith ſector if required *, and an apparatus

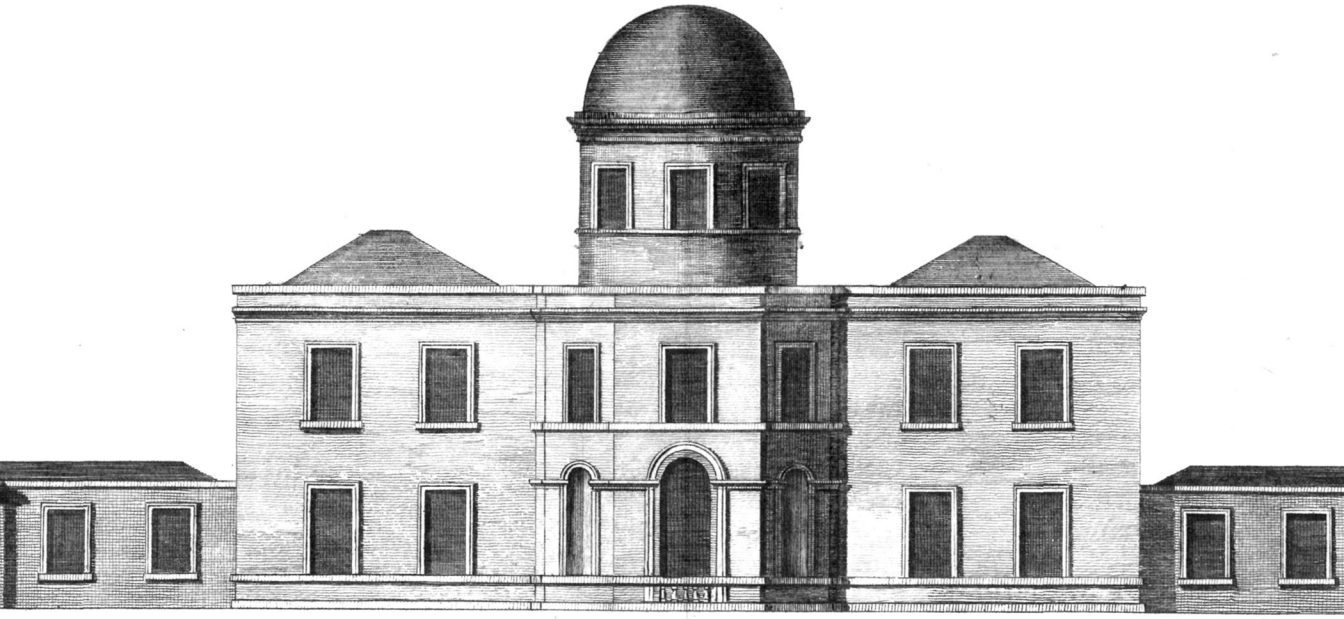
* Or of a pillar quadrant, if that ſhould by any one hereafter be conſidered as an expedient method for determining refractions.

apparatus of maſonry ſimilar to that in the ſouthern wing is propoſed for occaſional obſervers.

I HAVE now gone through the particulars of the conſtruction of this Obſervatory, which I hope and truſt will be a laſting monument to the honor of its founder, Doctor Francis Andrews, and a memorial to ages of the liberality and zeal of Trinity College, Dublin. May the ſpirit of true and genuine ſcience, for which this College has ever been diſtinguiſhed, continue unabated to remoteſt ages, ſupplying the world with men of genius and learning worthy of ſuch a patronage.

Plate I.





Scale of Inches

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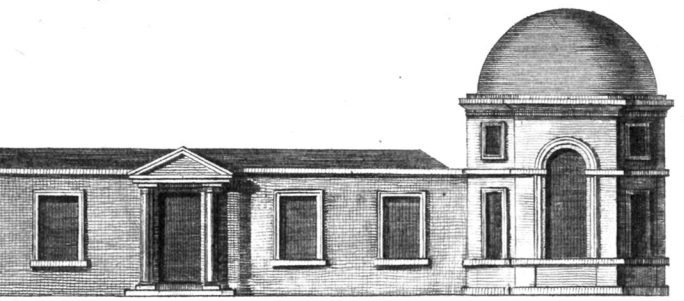
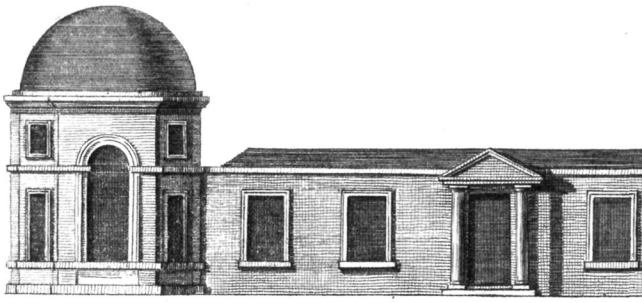
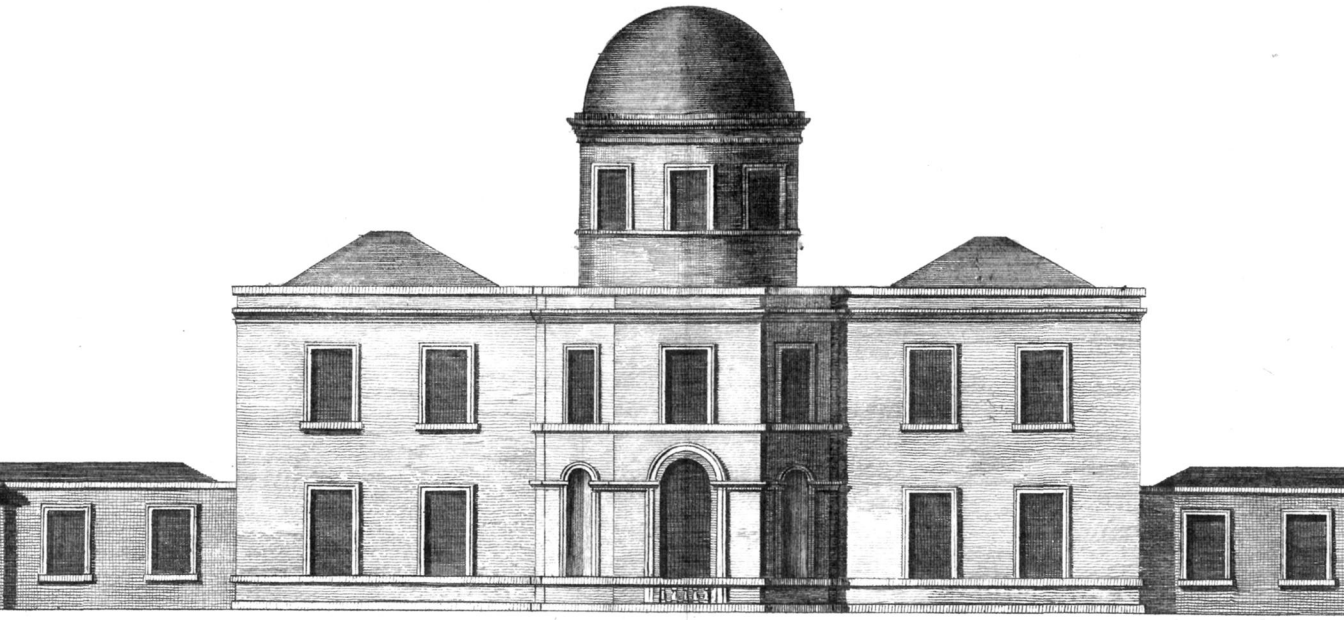




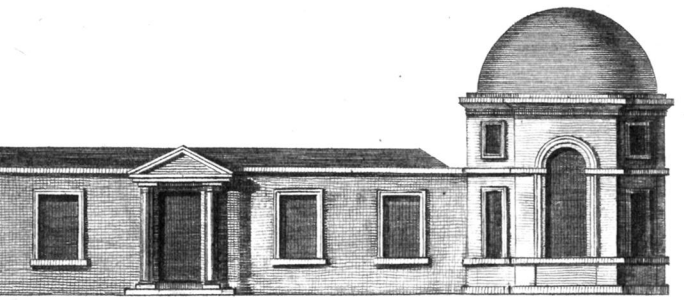
ELEVATION of Ea



Scale of Inches

5 10 15 20 25 30 35 40 45 50

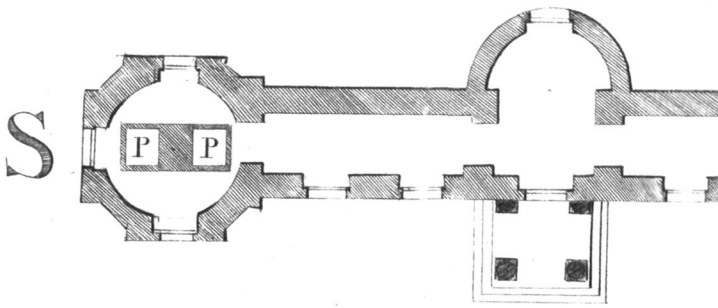
East front of the **OBSERVATORY** *belonging to Trinu*



Trinity College **DUBLIN.**

I. Ford sculp

Plate II



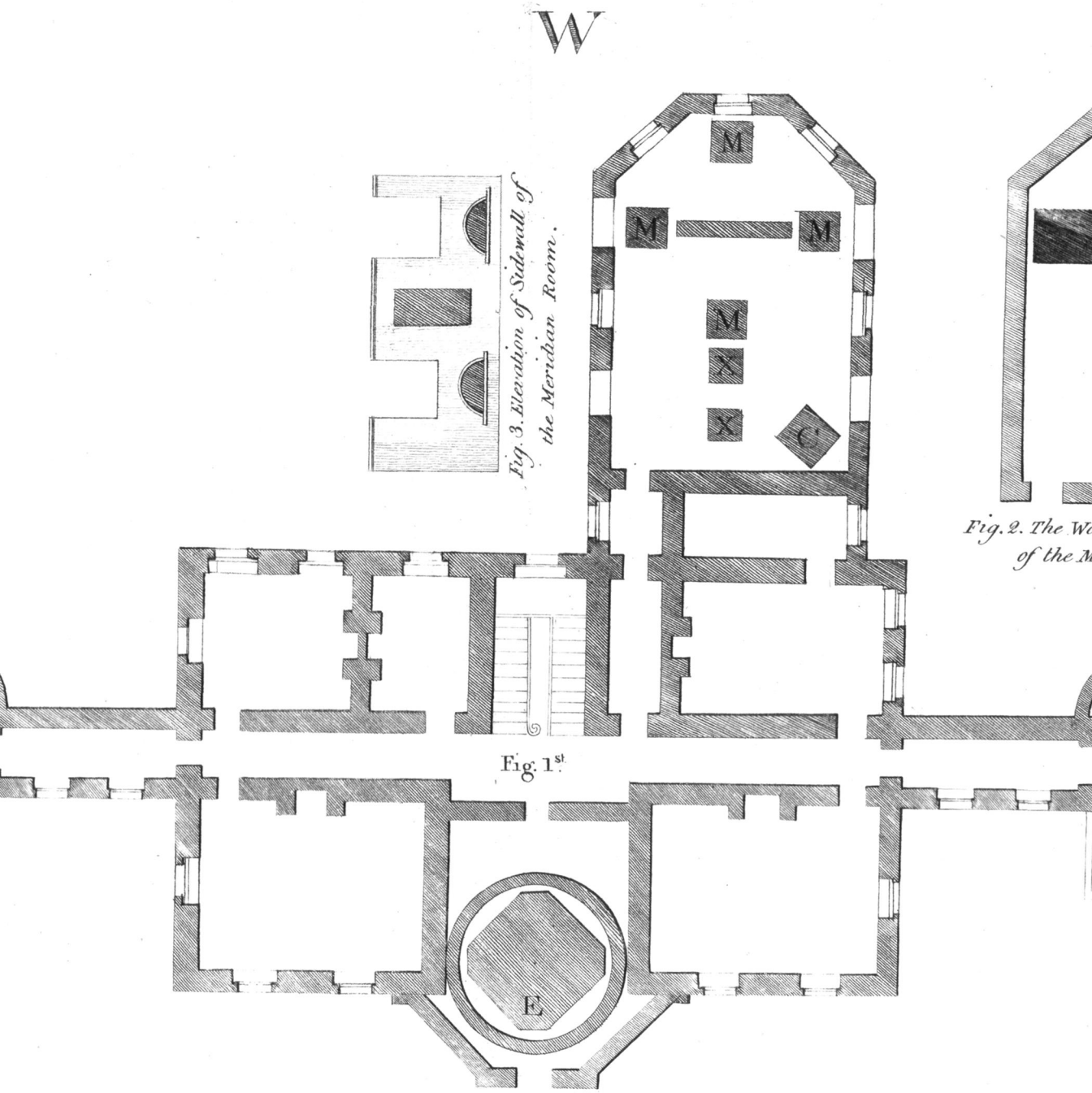
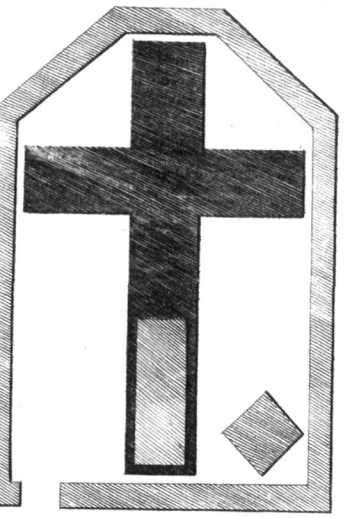


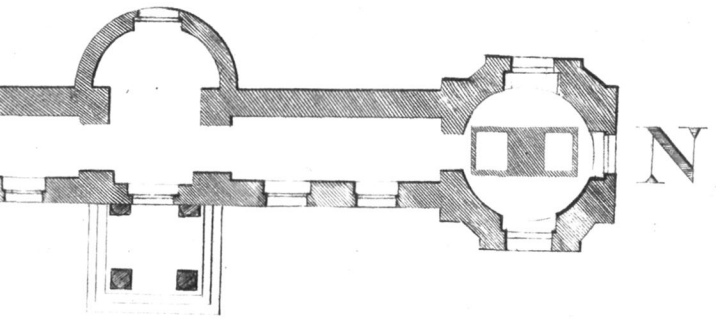
Fig. 3. Elevation of Sidewall of the Meridian Room.

Fig. 2. The W
of the M

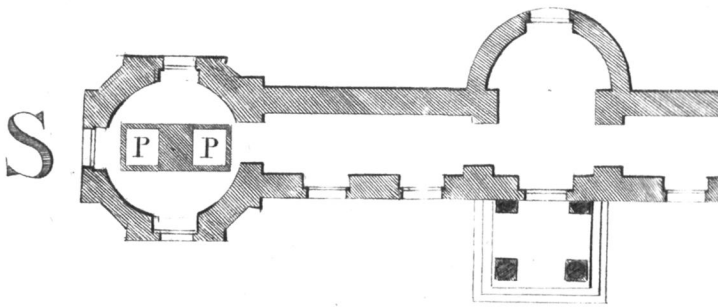
Fig. 1st.



2. The Work beneath the Floor
of the Meridian Room.



Scale of Feet



H. Usher Invt. et Delt.

GROUND P

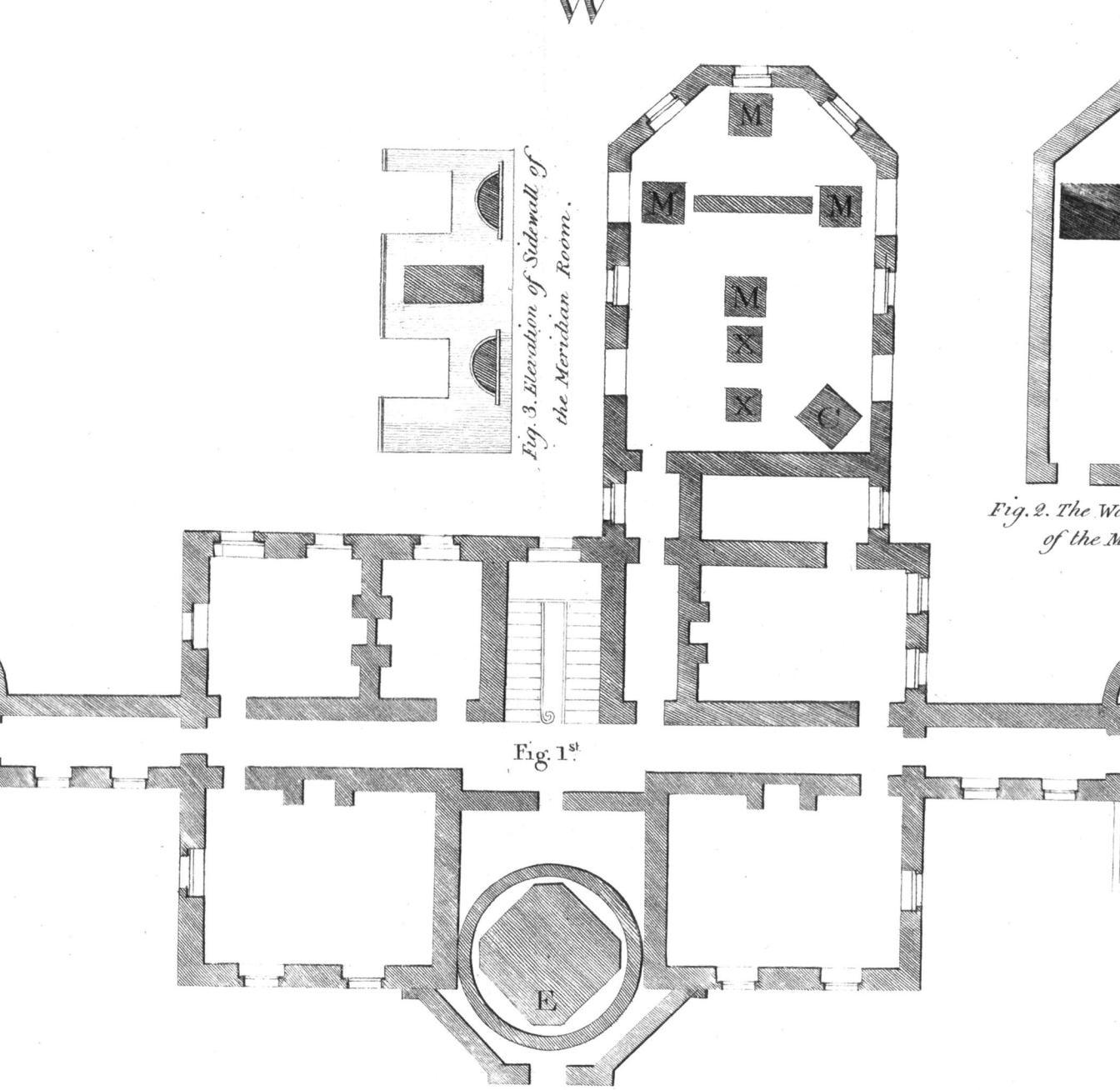


Fig. 3. Elevation of Sidewall of the Meridian Room.

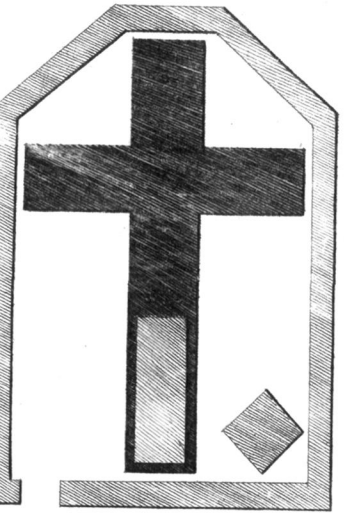
Fig. 2. The W... of the M...

Fig. 1st.

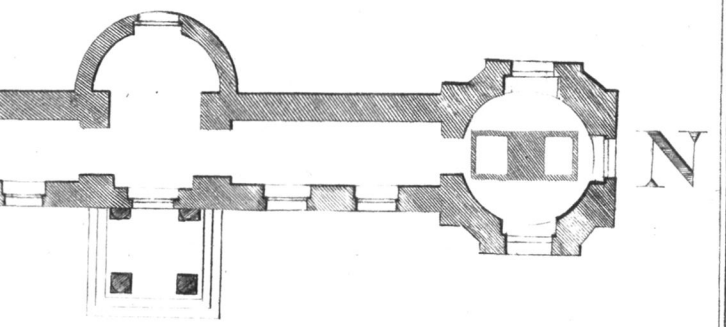
5 10

E

D PLAN of the OBSERVATORY *belonging to Trinity College* DU...



2. The Work beneath the Floor
of the Meridian Room.



Scale of Feet

10 15 20 25 30 35 40 45 50

DUBLIN.

I. Ford Sculpt.